SNC Reference Number

SNC 080176

PROJECT SUMMARY

County: **Region-wide**
Applicant: **University of California, Davis**
Project Title: **Connecting Sierra Nevada Communities and Landscapes**

PROJECT GOALS

To improve the understanding of Sierra Nevada landscape connectivity and its importance in watershed, municipal, and county planning. To improve the connections between communities and their surrounding natural landscapes.

PROJECT SCOPE

The Sierra Nevada is one of the largest wild places on the West Coast. In the winter, it is possible to travel over 200 miles from South to North without crossing an open road. Sierra Nevada watersheds provide water for both watershed residents and millions of downstream urban and agricultural users. Because of its natural beauty and high level of ecosystem service, the Sierra Nevada has continued to be a place of opportunity, recreation, and settlement. This popularity has brought impacts to Sierra Nevada landscapes and waterways, chief among them is fragmentation of aquatic and terrestrial habitat. *In our first task we will work with stakeholder organizations to help develop their goals for re-connecting Sierra Nevada watersheds and landscapes, benefiting both people and natural processes.*

Protecting and restoring landscape connectivity is a critical part of protecting watershed health and wildlife habitats and populations, a central theme in the Conservancy's Program Goals. Watershed fragmentation by roads and land-uses can result in reduced fish migration, siltation of streams and rivers, segmenting of fish and amphibian populations, modification of timing and amounts of water flows, and reduced functioning of stream and river channels. State and federal agencies also increasingly recognize the importance of landscape connectivity in protecting wildlife and ecological flows (e.g., water, nutrients, fire). The Department of Fish and Game's *"California Wildlife: Conservation Challenges"* (otherwise known as the California Wildlife Action Plan) recognizes landscape fragmentation as one of the greatest stressors to state wildlife, habitats, and sensitive aquatic and terrestrial ecosystems. The Plan prioritizes identification of landscape connectivity and the early inclusion of this information into state, regional, and local planning processes. *In our second and third tasks, we will collect, develop, and organize spatial data in a GIS and use those data to assess connectivity throughout the range.*

Future conditions in the Sierra Nevada will be heavily impacted by a combination of climate change, water management decisions, and land/transportation decisions. Any significant fiscal or social investments in watershed landscapes and waterways requires that due diligence be carried out investigating these impacts. *Our fourth task will focus on the effects of climate change and land-use decision-making on conservation assessments and future possibilities and risks for the environment.*

This project will create the necessary stakeholder collaboration and scientific foundations for regional mapping and modeling of landscape connectivity areas to facilitate early integration of conservation considerations into transportation and land-use planning processes at the regional, and local levels. This project will collaborate with ongoing local studies in the Sierra Nevada (e.g., Highway 89 wildlife corridor project and The Wilderness Society's vehicle noise project) to ensure that results are locally meaningfully. Finally, this project will help connect people to the idea of watershed and landscape connectivity and describe how community connections could be improved through land-use, transportation, restoration, and stewardship planning. By carrying out these activities, our project will help implement all SNC program goals by improving the quality and availability of information to local and regional planning processes. *Our fifth task will focus on re-connecting with stakeholders from Task 1 and others in the range to explain and present our findings in the context of the planning needs of different entity types (i.e., transportation planners, IRWMP groups, land-use planners, land trust, conservation organizations).*

Our project team includes experts in wildlife, watersheds, and ecological processes who have experience with working at the interface between ecosystems and policy & planning. We have developed statewide guidance for watershed assessment, wildlife crossings, and the inclusion of environmental information in local and regional land-use, water, and transportation planning. We have conducted connectivity analyses for land trusts, counties, National Forests, and eco-regions. We have been involved in land-use and transportation analyses and planning from the scale of individual stretches of highway to the scale of the whole Sierra Nevada. We have many GIS modeling tools at our fingertips and the ability to make the products understandable and useful to the local planner.

Our desired outcome is that connections between communities and watershed landscapes and connections across the watersheds of the range are understood and used in planning by the many planning and action entities in the Sierra Nevada.

LETTERS OF SUPPORT

Sarah Reed (The Wilderness Society), Dick Cameron (The Nature Conservancy), Sandra Jacobson (US Forest Service), Jodi Hilty (Wildlife Conservation Society)

SNC PROJECT DELIVERABLES AND SCHEDULE

DETAILED PROJECT DELIVERABLES	**TIMELINE**
Three regional meetings for stakeholder involvement in deciding parameters for connectivity assessments and types of useful products	Months 1-12
Spatial data organized in a GIS for watershed and landscape condition	Months 1-12
Connectivity assessment/model and output maps for human community connections and landscape connections at different scales	Months 9-24
Future scenarios modeling and outputs for climate change	Months 18-24

and land-use effects	
Three regional meetings with planners and other stakeholders to share results of connectivity assessments and their use in land-use, watershed, and transportation planning	Months 24-30

SNC PROJECT COSTS

PROJECT BUDGET CATEGORIES	TOTAL SNC FUNDING
Personnel (Salary and benefits)	$173,638
Travel	$1,600
Supplies and Grad Student Fees	$34,152
Sub-contractor	$50,000
Administrative costs	$38,910
Total	**$298,300**

5. EVALUATION CRITERIA

(a) **Project Quality and Readiness**

I. General Description:

Introduction

The Sierra Nevada is biologically, climatically, and geomorphologically diverse. It is also home to a rapidly growing human population demanding expanding housing, water, and transportation infrastructure and a legacy of mining and logging roads and disturbed areas. This development has led to the fragmentation of nearly all ecosystem types in the range and threatens a wide array of plant and wildlife species (California's "Wildlife Action Plan," CWAP). Public agencies and planners face the daunting task of meeting the infrastructure needs of a growing population within and outside the range, while minimizing habitat loss and fragmentation.

This proposed project would provide something that is greatly needed in the Sierra Nevada: a systematic analysis of landscape and community connectivity, based on replicable methods, which will support investments in landscape and watershed connections and other improvements. We will use a stakeholder-informed framework for connectivity analysis, based on regional needs and rule-sets, to provide planners at various scales with tools to include connectivity design in their watershed, transportation, and land-use plans. The project team will use a combination of existing connectivity models and the best contemporary spatial modeling methods to combine consideration of aquatic and terrestrial habitat condition, focal wildlife species distribution and movement, effects of land-use, transportation, and water management to identify strategic and prioritized sites and areas where connectivity is threatened